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BEYER WEAVER & THOMAS LLP			ALEJANDRO MULERO, LUZ L	
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1763
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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/040,326

Applicant(s)

HAO ET AL

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) 38, 40 and 62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22, 23, 25, 27-32, 34-37, 39, 41-45, 47, 49, 51, 52, 54, 55, 60, 61, 63 and 65-68 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

Continuation of Disposition of Claims: Claims pending in the application are 22-23, 25, 27-32,34-45, 47,49,51,52,54,55,60, 61-63 and 65-68.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 22-23, 25, 27-32, 49, 51-52, 54-55, 60-63, 65-66 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification, as filed, fails to describe an edge ring positioned on the chuck, as claimed on newly amended independent claims 22 and 49. It seems from the specification and the drawings that the substrate, instead of the edge ring, is positioned on the chuck.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22-23, 25, 27-32, 49, 51-52, 54-55, 60-63, 65-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "a generally planar edge ring disposed above said electrode and extending underneath a substrate when positioned on said chuck" in claim 22 and the

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phrase "a second component including a planar edge ring disposed underneath an outer region of the substrate when the substrate is positioned inside the process chamber for processing, and extending underneath a substrate when positioned on said chuck" in claim 49, are not clear since it appears from the specification and from the drawings of the instant invention that the substrate, instead of the edge ring, is positioned on the chuck.

The term "generally" in claim 22 is a relative term which renders the claim indefinite. The term "generally" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 22-23, 25, 27-31, 48-49, 51-55, 60-61, 63, and 65-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Masuda et al., U.S. Patent 6,171,438.

Masuda et al. shows the invention substantially as claimed including a pedestal for supporting a substrate W during plasma processing, the pedestal comprising: an electrode 130 configured generating an electric field; a chuck 131 disposed above the electrode, the chuck being configured for holding the substrate and having an outer periphery that is smaller than an outer periphery of the substrate (see fig. 2); a generally planar dielectric edge ring 133 disposed above the electrode and extending underneath a substrate when positioned on the chuck, the edge ring being configured for shielding the electrode and the chuck with inner edge portions proximate an edge of the substrate and an edge of the chuck and an outer edge portion extending to one edge of the electrode, and including a first portion configured to be disposed between the electrode and the substrate when the substrate is held by the chuck (and configured to surround an outer edge of the chuck) and a second portion being configured to surround an outer edge of the substrate when the substrate is held by the chuck for processing whereby the edge ring cooperated with the chuck to form a recessed portion for accepting the substrate for processing (see fig. 2); and an impedance matching layer 132 disposed and confined between the electrode and the edge ring, and underneath said substrate when said substrate is resting on said pedestal, said impedance matching layer being entirely planar and parallel with a top surface of the electrode and a bottom surface of the edge ring, the impedance matching layer made of a dielectric material such as quartz. It should be noted that the impedance matching layer 132 will control the impedance between the electrode and the plasma and will reduce the variations of the electric field so that the impedance produced through the edge ring is substantially

equal to the first impedance produced through the chuck (note that the word substantially can be interpreted broadly). For a complete description, see for example, figs. 1-2 and their descriptions).

Concerning claims 49, 53 and 54-55, note that the first component is the chuck, the second component is the edge ring, and the third component is the electrode.

With respect to claims 60-61 and 63, note that: a) the electrode is formed of a conductive material and the chuck, the edge ring and the impedance matching layer are made of dielectric material, b) the edge ring and the chuck can be made of the same material such as alumina and the impedance matching layer can be made of a material having a larger dielectric constant such as SiC, and c) the impedance matching layer can be made of materials including the claimed materials, (see, for example, col. 8. lines 44-63). Regarding claim 65, note that as broadly claimed the substrate region can be considered to be any region within the region of the lower electrode 130.

Concerning claim 66, the top surface of the electrode is configured to be substantially uniform and substantially parallel to the substrate so as to provide an even distribution of energy.

Claims 22-23, 25, 27-31, 48-49, 51-55, 63, and 65-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Wicker et al., U.S. Patent 6,129,808.

Wicker et al. shows the invention substantially as claimed including a pedestal for supporting a substrate 104 during plasma processing, the pedestal comprising: an electrode 108 configured generating an electric field; a chuck 106 disposed above the

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electrode, the chuck being configured for holding the substrate and having an outer periphery that is smaller than an outer periphery of the substrate (see fig. 2); a dielectric edge ring 114 being entirely planar and parallel and disposed above the electrode and extending underneath a substrate when positioned on the chuck, the edge ring being configured for shielding the electrode and the chuck with inner edge portions proximate an edge of the substrate and an edge of the chuck and an outer edge portion extending to one edge of the electrode, and including a first portion configured to be disposed between the electrode and the substrate when the substrate is held by the chuck (and configured to surround an outer edge of the chuck) and a second portion being configured to surround an outer edge of the substrate when the substrate is held by the chuck for processing whereby the edge ring cooperated with the chuck to form a recessed portion for accepting the substrate for processing (see fig. 1); and an impedance matching layer 112 disposed and confined between the electrode and the edge ring, the impedance matching layer made of a dielectric material such as SiC. It should be noted that the impedance matching layer 112 will control the impedance between the electrode and the plasma and will reduce the variations of the electric field. For a complete description, see for example, fig. 1 and its description).

Concerning claims 49, 53 and 54-55, note that the first component is the chuck, the second component is the edge ring, and the third component is the electrode.

With respect to claims 60-61 and 63, note that the impedance matching layer can be made of materials including the claimed materials, (see, for example, col. 6. lines 16-

23). Regarding claim 65, note that as broadly claimed the substrate region can be considered to be any region within the region of the lower electrode.

Concerning claim 66, the top surface of the electrode is configured to be substantially uniform and substantially parallel to the substrate so as to provide an even distribution of energy.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 22-23, 25, 27-32, 34-37, 39, 41-43, 47-49, 51-55 and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., U.S. Patent 5,792,304 in view of Ohmi et al., WO 98/39500.

Tamura et al. shows the invention substantially as claimed including a pedestal for supporting a substrate 1 during plasma processing, the pedestal comprising: an electrode 2 configured generating an electric field (see, for example, fig. 9 and col. 14, line 44-52); a chuck disposed above the electrode, the chuck being configured for holding the substrate and having an outer periphery that is smaller than an outer periphery of the substrate (see, for example, fig. 9 and col. 14, line 44-52); a generally planar dielectric edge ring 36 disposed above the electrode and extending underneath a substrate when positioned on the chuck, the edge ring being configured for shielding the electrode and the chuck with inner edge portions proximate an edge of the substrate and an edge of the chuck and an outer edge portion extending to one edge of the electrode, and including a first portion configured to be disposed between the electrode and the substrate when the substrate is held by the chuck (and configured to surround an outer edge of the chuck) and a second portion being configured to surround an outer edge of the substrate when the substrate is held by the chuck for processing whereby the edge ring cooperated with the chuck to form a recessed portion for accepting the substrate for processing. For a complete description, see for example, fig. 9 and its description).

Tamura et al. does not expressly disclose the claimed impedance matching layer disposed between the electrode and the edge ring. Ohmi et al., as described above, discloses an apparatus comprising a pedestal for supporting a substrate 108 during plasma processing, the pedestal including an impedance matching layer 104 disposed and confined between an electrode 101 and an edge ring 103, the impedance matching

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layer made of a dielectric material and has characteristics configured for controlling an impedance between the electrode and a plasma in order to improve the processing uniformity across the surface of the substrate and make impedances substantially equal at different regions underneath the substrate (see, for example, figs. 1, 6A, 6B, 7B, 9, 26A-26I, and their descriptions). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the pedestal of the Tamura et al. as to comprise an impedance matching layer disposed between the electrode and the edge ring, as taught by Ohmi et al., in order to improve the processing uniformity across the surface of the substrate and thereby optimizing the apparatus.

With respect to claims 23, 25, 27, the impedance matching layer of the apparatus of Tamura et al. modified by Ohmi et al., will reduce variations in the electric field, is arranged to control the impedance between the electrode and the plasma at the edge of the substrate, is configured to be disposed between the electrode and the substrate when the substrate is held by the chuck. Regarding claim 32, the chuck, edge ring and impedance matching layer are formed from a dielectric material, wherein the dielectric constant of the edge ring may be equal to the dielectric constant of the chuck (note that both the chuck and the edge ring can be made of  $\text{Al}_2\text{O}_3$ ), and wherein the dielectric constant of the impedance matching layer may be different than the dielectric constant of the edge ring and the chuck. Furthermore and with respect to claim 33, it should be noted that a first impedance produced through the chuck is different than a second impedance produced through the edge ring, and wherein the impedance matching layer may be arranged to adjust the second impedance produce through the edge ring so that

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the second impedance is substantially equal to the first impedance produced through the chuck.

With respect to claim 34, note that the chuck is disposed in an inner region of the electrode, the edge ring is disposed above the outer region of the electrode and positioned next to a side of the chuck, and the impedance matching layer is disposed between the edge ring and the electrode and above the outer region of the electrode.

Regarding claims 36-37 and 41, note that the impedance matching layer of the apparatus of Tamura et al. modified by Ohmi et al., is bonded to both the edge ring and the electrode by screw 112, the electrode has an outer periphery that is greater than the outer periphery of the substrate when the substrate is disposed on the chuck for processing.

Regarding claims 49, 53 and 54-55, note in the pedestal of Tamura et al. modified by Ohmi et al., the first component is the chuck, the second component is the edge ring, and the third component is the electrode.

Regarding claim 65, note that as broadly claimed the substrate region can be considered to be any region within the region of the lower electrode.

With respect to the impedance matching layer being bonded to the edge ring through a silicon elastomer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bond these elements through a silicon elastomer because this is a well established means of bonding elements in a plasma processing apparatus.

Claims 44-45, 60-61, 63, and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., U.S. Patent 5,792,304 in view of Ohmi et al., WO 98/39500 as applied to claims 22-23, 25, 27-32, 34-37, 39, 41-43, 47-49, 51-55 and 65-67 above, and further in view of Masuda et al., U.S. Patent 6,171,438.

Tamura et al. and Ohmi et al. are applied as above but do not expressly disclose a heat transfer system as claimed. Masuda et al. discloses a plasma processing apparatus comprising a pedestal including a heat transfer system for controlling the temperature of the substrate and the edge ring during processing, the heat transfer system including a first channel extending through the electrode to the interface between the chuck and the substrate, and a second channel extending through the electrode to the interface between the electrode and the edge ring, the heat transfer system being configured to provide a heat transfer medium through the channels, wherein the heat transfer is a helium gas (see fig. 2 and its description). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Tamura et al. modified by Ohmi et al. as to comprise the heat transfer system disclosed by Masuda et al. because this allows for effective and efficient temperature control of the substrate and the edge ring without incorporating a complicated mechanism.

Tamura et al. and Ohmi et al. are applied as above but do not expressly disclose the claimed limitation of claims 60-61 and 63. Masuda et al., as described above, discloses an apparatus comprising a pedestal having an electrode formed of a conductive material and the edge ring, the chuck and the impedance matching layer are

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made of a dielectric material (see, for example, col. 8. lines 44-63). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Tamura et al. modified by Ohmi et al. as to comprise an electrode, a chuck, an edge ring and the impedance matching layer made of the claimed material because such materials are known to be suitable material. Note that Masuda teaches that the edge ring and the chuck can be made of the same material such as alumina and the impedance matching layer can be made of a material having a larger dielectric constant such as SiC.

Claims 32, 34-37, 39, 41-45, 47, and 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuda et al., U.S. Patent 6,171,438.

Masuda et al. shows the invention substantially as claimed including a pedestal for supporting a substrate W during plasma processing, the pedestal comprising: an electrode 130 configured generating an electric field; a chuck 131 disposed above the electrode, the chuck being configured for holding the substrate and having an outer periphery that is smaller than an outer periphery of the substrate (see fig. 2); an edge ring 133 disposed above the electrode, the edge ring being configured for shielding the electrode and the chuck, and including a first portion configured to be disposed between the electrode and the substrate when the substrate is held by the chuck (and configured to surround an outer edge of the chuck) and a second portion being configured to surround an outer edge of the substrate when the substrate is held by the chuck for processing whereby the edge ring cooperated with the chuck to form a recessed portion

for accepting the substrate for processing (see fig. 2); and an impedance matching layer 132 disposed between the electrode and the edge ring, the impedance matching layer made of a dielectric material such as quartz. It should be noted that the impedance matching layer 132 will control the impedance between the electrode and the plasma and will reduce the variations of the electric field. Furthermore, note that the chuck is disposed in an inner region of the electrode, the edge ring is disposed above the outer region of the electrode and positioned next to a side of the chuck, and the impedance matching layer is disposed between the edge ring and the electrode and above the outer region of the electrode. For a complete description, see for example, figs. 1-2 and their descriptions).

Masuda et al. further discloses that the chuck, the edge ring and the impedance matching layer are made of a dielectric material, but does not expressly disclose that the dielectric constant of the edge ring is equal to the dielectric constant of the chuck, wherein the dielectric constant of the impedance matching layer is different than the dielectric constant of the edge ring and the chuck, and wherein the impedance matching layer is arranged to adjust an impedance produced through the edge ring so that it is substantially the same impedance as an impedance produced through the chuck. However, it would have been an obvious choice of design to one having ordinary skill in the art at the time the invention was made to choose the same or different materials for the chuck, the edge ring and the impedance matching layer based upon a variety of factors, including for example, the plasma resistance of the material, and such limitation

would not lend patentability to the instant invention absent the showing of unexpected results.

Regarding claims 36-37 and 41, note that the impedance matching layer is bonded to both the edge ring and the electrode, the electrode has an outer periphery that is greater than the outer periphery of the substrate when the substrate is disposed on the chuck for processing.

Regarding claims 44-45, note that Masuda et al. discloses such heat transfer system (see fig. 2 and its description).

With respect to the impedance matching layer being bonded to the edge ring through a silicon elastomer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bond these elements through a silicon elastomer because this is a well established means of bonding elements in a plasma processing apparatus.

Claims 32, 34-37, 39, 41-43, 47, and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicker et al., U.S. Patent 6,129,808.

Wicker et al. shows the invention substantially as claimed including a pedestal for supporting a substrate 104 during plasma processing, the pedestal comprising: an electrode 108 configured generating an electric field; a chuck 106 disposed above the electrode, the chuck being configured for holding the substrate and having an outer periphery that is smaller than an outer periphery of the substrate (see fig. 2); an edge ring 114 disposed above the electrode, the edge ring being configured for shielding the

electrode and the chuck, and including a first portion configured to be disposed between the electrode and the substrate when the substrate is held by the chuck (and configured to surround an outer edge of the chuck) and a second portion being configured to surround an outer edge of the substrate when the substrate is held by the chuck for processing whereby the edge ring cooperated with the chuck to form a recessed portion for accepting the substrate for processing (see fig. 1); and an impedance matching layer 112 disposed between the electrode and the edge ring, the impedance matching layer made of a dielectric material such as SiC. It should be noted that the impedance matching layer 112 will control the impedance between the electrode and the plasma and will reduce the variations of the electric field. Furthermore, note that the chuck is disposed in an inner region of the electrode, the edge ring is disposed above the outer region of the electrode and positioned next to a side of the chuck, and the impedance matching layer is disposed between the edge ring and the electrode and above the outer region of the electrode. For a complete description, see for example, fig. 1 and its description).

Wicker et al. further discloses that the chuck, the edge ring and the impedance matching layer are made of a dielectric material, but does not expressly disclose that the dielectric constant of the edge ring is equal to the dielectric constant of the chuck, wherein the dielectric constant of the impedance matching layer is different than the dielectric constant of the edge ring and the chuck, and wherein the impedance matching layer is arranged to adjust an impedance produced through the edge ring so that it is substantially the same impedance as an impedance produced through the chuck.

However, it would have been an obvious choice of design to one having ordinary skill in the art at the time the invention was made to choose the same or different materials for the chuck, the edge ring and the impedance matching layer based upon a variety of factors, including for example, the plasma resistance of the material, and such limitation would not lend patentability to the instant invention absent the showing of unexpected results.

Regarding claims 36-37 and 41, note that the impedance matching layer is bonded to both the edge ring and the electrode, the electrode has an outer periphery that is greater than the outer periphery of the substrate when the substrate is disposed on the chuck for processing.

With respect to the impedance matching layer being bonded to the edge ring through a silicon elastomer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bond these elements through a silicon elastomer because this is a well established means of bonding elements in a plasma processing apparatus.

Claims 44-45 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicker et al., U.S. Patent 6,129,808, as applied to claims 32, 34-37, 39, 41-43, 47, and 67 as above, and further in view of Masuda et al., U.S. Patent 6,171,438.

Wicker et al. is applied as above but does not expressly disclose a heat transfer system as claimed. Masuda et al. discloses a plasma processing apparatus comprising a pedestal including a heat transfer system for controlling the temperature of the

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substrate and the edge ring during processing, the heat transfer system including a first channel extending through the electrode to the interface between the chuck and the substrate, and a second channel extending through the electrode to the interface between the electrode and the edge ring, the heat transfer system being configured to provide a heat transfer medium through the channels, wherein the heat transfer is a helium gas (see fig. 2 and its description). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Wicker et al., as to comprise the heat transfer system disclosed by Masuda et al. because this allows for effective and efficient temperature control of the substrate and the edge ring without incorporating a complicated mechanism.

Claims 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicker et al., U.S. Patent 6,129,808, as applied to claims 22-23, 25, 27-31, 48-49, 51-55, 63, and 65-66 as above, and further in view of Masuda et al., U.S. Patent 6,171,438.

Wicker et al. is applied as above and further discloses that the electrode is made of a conductive material and the edge ring and the impedance matching layer are made of a dielectric material (see col. 6, lines 15-23). However, the reference does not expressly disclose that the chuck is made of a dielectric material. Masuda et al. discloses an apparatus comprising a pedestal having an electrode formed of a conductive material, and having a chuck, an edge ring, and an impedance matching layer made of a dielectric material (see, for example, col. 8. lines 44-63). Therefore, it

would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Wicker et al. as to comprise a chuck made of a dielectric material because such material is a suitable material for the chuck. With respect to claim 61, note that Masuda discloses that the edge ring and the chuck can be made of the same material such as alumina and the impedance matching layer can be made of a material having a larger dielectric constant such as SiC.

### ***Response to Arguments***

Applicant's arguments filed 1/27/06 have been fully considered and they are persuasive with respect to the rejection under 35 USC 102(b) over Ohmi et al., WO 98/39500, but they are not persuasive with respect to the arguments with respect to all of the other rejections. The claims of the instant invention are believed to be rejectable over the cited prior art for the reasons given in the rejection and response to arguments mailed on 10/18/05, and for the reasons described below.

Applicant argues that the insulator 133 of Masuda et al. envelopes the electrostatic chuck and is not confined between the electrode and the edge ring. The examiner respectfully disagrees since the edge ring 133 of Masuda et al. does not envelope the electrostatic chuck (see fig. 2 of Masuda et al.). Additionally, it should be noted that the instant claims requires that the impedance matching layer (not the edge ring) be the one confined between the electrode and the edge ring and therefore, Masuda et al. reads on the claims since impedance matching layer 132 in Masuda et al. is confined between the electrode and the edge ring. Furthermore, note that as broadly

claimed the claims do not require that the impedance matching layer be in direct contact with the electrode.

Applicant argues that the pedestal 112 of Wicker et al. envelopes the chuck and electrode 108 is not confined between the electrode and the edge ring and underneath the substrate as defined by the newly amended claims. The examiner respectfully disagrees since the impedance matching layer 112 of Wicker et al. does not envelope the electrostatic chuck (see fig. 1 of Wicker et al.). Additionally, it should be noted that the instant claims requires that the impedance matching layer (not the electrode) be the one confined between the electrode and the edge ring and therefore, Wicker et al. reads on the claims since impedance matching layer 112 in Wicker et al. is confined between the electrode and the edge ring. Furthermore, note that as broadly claimed the claims do not require that the impedance matching layer be in direct contact with the electrode.

Applicant argues that there is no suggestion for including the impedance matching layer taught by Ohmi et al. in the apparatus of Tamura et al. and that the pedestal as now claimed would not result from the combination of the reference. The examiner respectfully disagrees since as stated in the previous and in the above rejections, the inclusion of the impedance matching layer in the apparatus of Tamura et al. would improve the processing uniformity across the surface of the substrate, thereby optimizing the apparatus of Tamura et al. and the methods performed by the apparatus of Tamura et al.. Furthermore, the combination of the teachings of Tamura et al. and Ohmi et al. would meet all the limitations of the newly claimed invention as stated in the above rejections.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

April 17, 2006